

CLAIMS

1. A method of semiconductor device fabrication using a semiconductor substrate comprising a lattice-strain relaxed silicon germanium layer and a lattice strained silicon layer formed in this order of mention onto a silicon substrate or onto a substrate having a silicon layer on the surface thereof, said method comprising:

an etching step of etching the portions for device isolation regions of said semiconductor substrate so as to form device isolation grooves;

a deposition step of depositing a silicon film on said semiconductor substrate; and

an oxidation step of oxidizing the deposited silicon film.

2. A method of semiconductor device fabrication according to Claim 1, wherein

in said deposition step, a silicon film of 5 through 10 nm is deposited.

3. A method of semiconductor device fabrication according to Claim 2, wherein

in said oxidation step, said deposited silicon film is oxidized completely.

4. A method of semiconductor device fabrication according

to Claim 3, further comprising the step of
depositing a protective film for protecting portions for device
activity regions onto the surface of said semiconductor substrate
before said etching step.

5. A method of semiconductor device fabrication according
to Claim 1, wherein

in said oxidation step, said deposited silicon film is oxidized
completely.

6. A method of semiconductor device fabrication according
to Claim 5, wherein

in said deposition step, a silicon film of 5 through 10 nm is
deposited.

7. A method of semiconductor device fabrication according
to Claim 6, further comprising the step of

depositing a protective film for protecting portions for device
activity regions onto the surface of said semiconductor substrate
before said etching step.

8. A method of semiconductor device fabrication according
to Claim 1, further comprising the step of

depositing a protective film for protecting portions for device
activity regions onto the surface of said semiconductor substrate

before said etching step.

9. A method of semiconductor device fabrication according to Claim 8, wherein

in said deposition step, a silicon film of 5 through 10 nm is deposited.

10. A method of semiconductor device fabrication according to Claim 9, wherein

in said oxidation step, said deposited silicon film is oxidized completely.

11. A method of semiconductor device fabrication using a semiconductor substrate comprising a lattice-strain relaxed silicon germanium layer, one or more semiconductor layers, and a lattice strained silicon layer formed in this order of mention onto a silicon substrate or onto a substrate having a silicon layer on the surface thereof, said method comprising:

an etching step of etching the portions for device isolation regions of said semiconductor substrate so as to form device isolation grooves;

a deposition step of depositing a silicon film on said semiconductor substrate; and

an oxidation step of oxidizing the deposited silicon film.

12. A method of semiconductor device fabrication according to Claim 11, wherein

in said deposition step, a silicon film of 5 through 10 nm is deposited.

13. A method of semiconductor device fabrication according to Claim 12, wherein

in said oxidation step, said deposited silicon film is oxidized completely.

14. A method of semiconductor device fabrication according to Claim 13, further comprising the step of

depositing a protective film for protecting portions for device activity regions onto the surface of said semiconductor substrate before said etching step.

15. A method of semiconductor device fabrication according to Claim 11, wherein

in said oxidation step, said deposited silicon film is oxidized completely.

16. A method of semiconductor device fabrication according to Claim 15, wherein

in said deposition step, a silicon film of 5 through 10 nm is deposited.

17. A method of semiconductor device fabrication according to Claim 16, further comprising the step of
depositing a protective film for protecting portions for device activity regions onto the surface of said semiconductor substrate before said etching step.

18. A method of semiconductor device fabrication according to Claim 11, further comprising the step of
depositing a protective film for protecting portions for device activity regions onto the surface of said semiconductor substrate before said etching step.

19. A method of semiconductor device fabrication according to Claim 18, wherein
in said deposition step, a silicon film of 5 through 10 nm is deposited.

20. A method of semiconductor device fabrication according to Claim 19, wherein
in said oxidation step, said deposited silicon film is oxidized completely.